KMDA-7610/7920/7921

User's Manual

Ver.A 0.1

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Version Note

No.	Ver.	Note	Date
1	A 0.1	First publish	2023.07.10

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JHC warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by JHC, or which have been subject to misuse, abuse, accident or improper installation.

JHC assumes no liability under the terms of this warranty as a consequence of such events.

Because of JHC.s high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an JHC product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, JHC products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from JHC. Please contact your local supplier for ordering information. Test conditions for passing included the equipment being operated within an industrial enclosure. In order to protect the product from being damaged by ESD (Electrostatic Discharge) and EMI leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

FCC Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

Step 1. Visit the JHC web site at www.jhctech.com.cn where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or JHC's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version,application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

CONTENTS

CHAPTER 1

General Information

1.1 Introduction

KMDA-7610/7920/7921 is an embedded industrial box computer developed and designed by JHC. It is powered by Intel® 12/13th-generation Alder lake-S/Raptor lake-S LGA1700 CPU, Intel H610 chipset, and supports 2*262-Pin SODIMM，dual channel DDR5 4800MHz, up to 64GB, using Intel UHD Graphics, KMDA-7920/7921 can supports multiple PCI/PCIe expansion slots, can meet the user's application requirements in a variety of projects.

KMDA-7610/7920/7921 products provide rich I/O interfaces, including 1*DP + 1*HDMI + 1*VGA, dual Gigabit network ports, 4*USB3.2, 2*USB2.0, 4*COM, 16 bit isolated DIO, 1*MIC+1*LINE OUT，1*Full Size Mini PCIe, with SIM card slot, with PCIeX1 and USB2.0 signals, supports 4G/WiFi/BT and other wireless functions, 1*mSATA, 2*2.5” SATA bay. In addition, KMDA-7920/7921 supports 2/4 PCIe/PCI extensions. DC 9~36V wide voltage input, 3*LED lights are used to monitor the working condition of CPU, which is convenient for users to understand the working state of the machine. It is very suitable for industrial automation, highway tolling, AI edge computing, security monitoring and environmental monitoring and other industries and fields.

1.2 Features

1. Aluminium-magnesium alloy chassis and fanless cooling design, SGCC frame
2. Intel® Alder lake-S/Raptor lake-S 12/13th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU, Intel® H610 PCH
3. 2*262-Pin SODIMM, dual channel DDR5 4800MHz, up to 64GB
4. 1*full size Mini-PCIe (PCIeX1+USB2.0 signal) with SIM card slot, supports 4G LTE modem or PCIe signal function module
5. 2*2.5 "SATA3 bay, supports up to 6G bit/ s transmission speed; 1*mSATA, with SATA3.0 signal, supports up to 6G bit/ s transmission speed
6. 1*DP, 1*VGA, 1*HDMI, three display interfaces, supports three independent displays
7. 1*Intel I226V+1*Intel I219LM controller, 2*RJ45
8. Realtek ALC897 chip, 1*Line Out, 1*MIC
9. 16-bit isolation DIO, 4*USB3.2, 2*USB2.0, 4*COM (2*RS232/422/485+2*RS232)
10. 1*PCIeX16 (X16 signal) +1*PCIeX4 (X2 signal) +2*PCI quad-expansion slot (KMDA-7921)

11. 1*PCIeX16 (X16 signal) +1*PCIeX16 (X4 signal) Dual expansion slot (KMDA-7920)
12. Place the clear CMOS switch on the front panel for user convenience in clearing CMOS operations
13. The AT/ATX power on mode selection switch is placed on the front panel for easy user selection of power on mode
14. 9 ~ 36V DC wide voltage input, CPU temperature led analog display
15. Optional TPM2.0 data security encryption

1.3 Specifications

1.3.1 General

CPU: Intel® Alder lake-S/Raptor lake-S 12/13th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU

PCH: Intel H610

System Memory: 2*dual-channel DDR5 4800MHz SODIMMs, up to 64GB

Watchdog Timer: 0~255 level interval timer, set by software

USB: 4*USB3.2, Type A; 2*USB2.0, Type A

Serial Ports： 2*RS-232/422/485, DB9 male, 2*RS-232 DB9 male

DIO: 16bit Iso. DIO support NPN (sink) and PNP (Source) mode, and 8-bit DI each channel is equipped with a 2.5KV photocouper for isolated protection; 8-bit DO each DO with isolator chip, each DO chanel current up to 200mA

I-Port： Supports built-in expansion interfaces such as 16-bit DIO, USB2.0, or Mini PCIe for export

Expansion Interface:

1*Full size Mini PCIe, with SIM card slot

PCI/PCIe slots

-KMDA-7920: 1*PCIeX16（X16 signal）+1*PCIeX16 (X4 signal) or 1*PCIeX16（X16 signal）+1*32bit PCI

-KMDA-7921: 1*PCIeX16（X16 signal）+1*PCIeX4（X2 signal)+2*PCI slot

Storage:

1*mSATA

2*2.5-inch SATA3 bay

1.3.2 Display

Chip： Intel UHD Graphics

Display Memory： Shared system memory

Resolution: DP max res. 7680*4320@60Hz; HDMI max res. 4096*2160@60Hz; VGA max res. 1920*1200@60Hz

1.3.3 Ethernet

Chipset: 1*Intel I226V Gig. Ethernet, 1*Intel I219LM Gig. Ethernet

Speed: 10/100/1000 Mbps adaptive

Interface: 2*RJ45

1.3.4 Audio

Chipset: Realtek ALC897 audio chip

Interface: 1*Line out, 1*Mic, 3.5mm audio interface

1.3.5 Power

Input Voltage: DC 9-36V

Power Consumption:

KMDA-7610：79.1W（i7-12700K CPU/2*16G DDR5/256G SSD）

KMDA-7920： 80.2W (i7-12700K CPU/2*16G DDR5/256G SSD, no acceleration card or function card）

KMDA-7921： 80.2W (i7-12700K CPU/2*16G DDR5/256G SSD, no acceleration card or function card）

Power Adapter:

AC/DC 19V/6.32A, 120W (for KMDA-7610, and KMDA-7921/7920 without graphics card)

AC/DC 24V/9.17A, 220W（ for KMDA-7921/7920 with independent graphics card ）

AC/DC 24V/12.5A, 300W（ for KMDA-7921/7920 with independent graphics card ）

1.4 Environmental requirement

Operating temperature: -20~60℃ (No fan, SSD, air flow); -10~55℃ (No fan, HDD, air flow)

Relative humidity: 10%-95%@40°C (non-condensing)

Storage temperature: -40~85°C (-40 ~ 185°F)

Vibration loading during operation: With SSD: 5.0 grms/random/5～500 Hz; with HDD: 1.0 grms/random/5～500 Hz

Shock during operation: With SSD: 50g peak acceleration (continue 11ms); with HDD: 20g peak acceleration (continue 11ms)

EMC: CE, FCC Class A

1.5 KMDA-7921/7920/7610 Series Ordering Information

Model No.	**KMDA-7921-S001**	**KMDA-7920-S001**	**KMDA-7610-S001**
CPU	Intel® Alder lake-S/Raptor lake-S 12/13th Gen Core™ i9/i7/i5/i3/Pentium/Celeron LGA1700 CPU		
Chipset	Intel® H610		
SODIMM	2		
Storage	2*SATA3，1* mSATA		
LAN	2		
USB	4*USB3.2，2*USB2.0		
COM	2*RS232/422/485, 2*RS232		
DIO	16bit Iso. DIO support NPN (sink) and PNP (Source) mode, and 8-bit DI each channel is equipped with a 2.5KV photocouper for isolated protection; 8-bit DO each DO with isolator chip, each DO chanel current up to 200mA		
Graphics	1*HDMI，1*DP，1*VGA		
Audio	Realtek ALC897 controller, 1*Line out and 1*MIC high fidelity Audio, supports 5.1 channel		
I-port	Supports built-in expansion interfaces such as 16-bit DIO, USB2.0, or Mini PCIe for		

	export		
Expansion	1*Full Size Mini-PCIe， 1*PCIe X16（X16 signal） +1*PCIe X4（X2 signal） +2*PCI	1*Full Size Mini-PCIe， 1*PCIeX16（X16 signal） +1*PCIeX16（X4 signal）	1*Full Size Mini-PCIe

1.6 Structural Specification

KMDA-7921/7920/7610 Embedded industrial box computer, is composed of JHC OSBC (single-board computer AXM-I981), JHC sub-card (ECB-9810), expansion base card (ECX-266/255/271) splicing assembly, installed in the universal aluminum rectangular profile housing.

Warning: be sure to turn off the power and unplug before installation, do not operate with live power!

The specific arrangement and combination of the main board and sub-cards are as follows:

Model No.	KMDA-7921-S001	KMDA-7920-S001	KMDA-7610-S001
AXM-I981	✓	✓	✓
ECB-9810	✓	✓	✓
ECX-266	✓		
ECX-255/ECX-271		✓	

(* Note: The actual position of the physical interface may vary with the product version, please refer to the physical model.)

KMDA-7921-S001 Dimension : **Unit: mm**

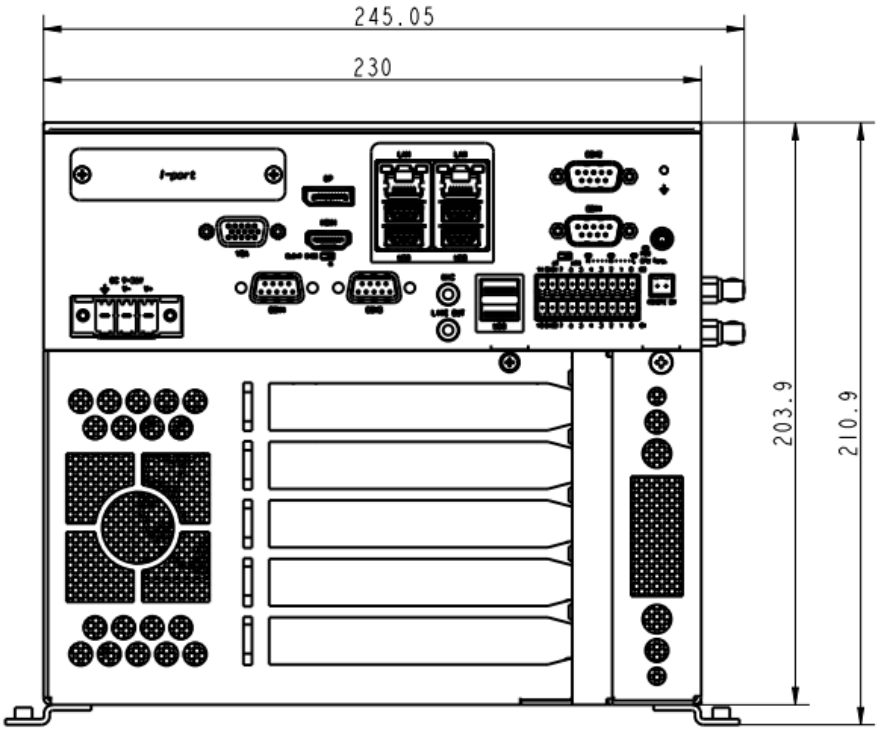

Figure 1.1

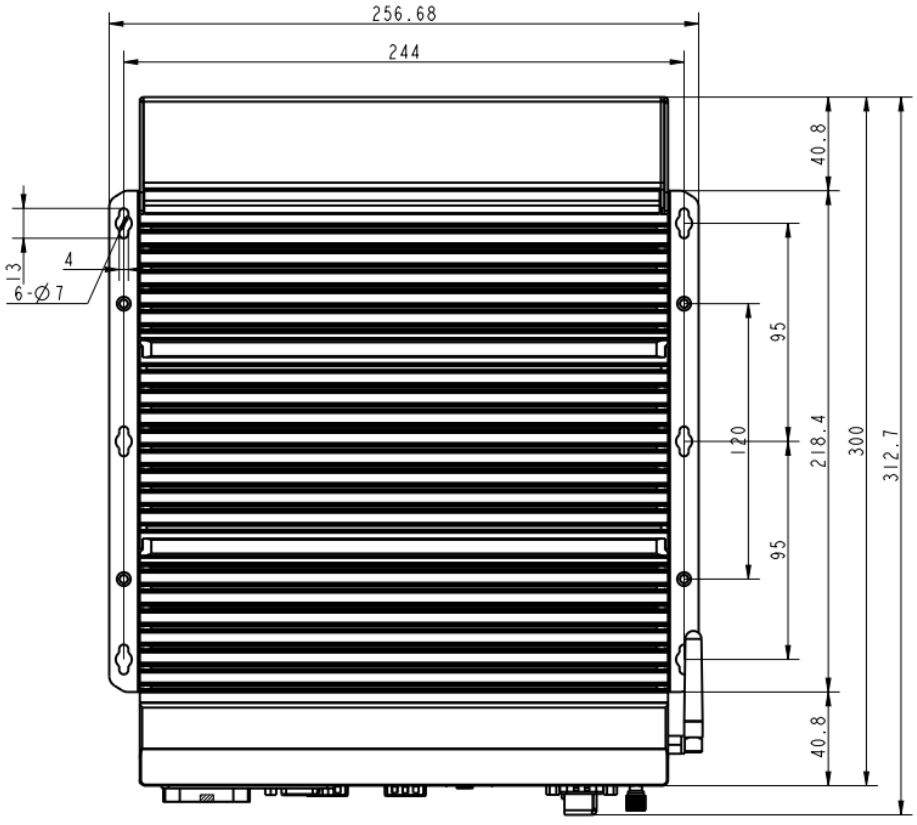

Figure 1.2

KMDA-7920-S001 Dimension : **Unit: mm**

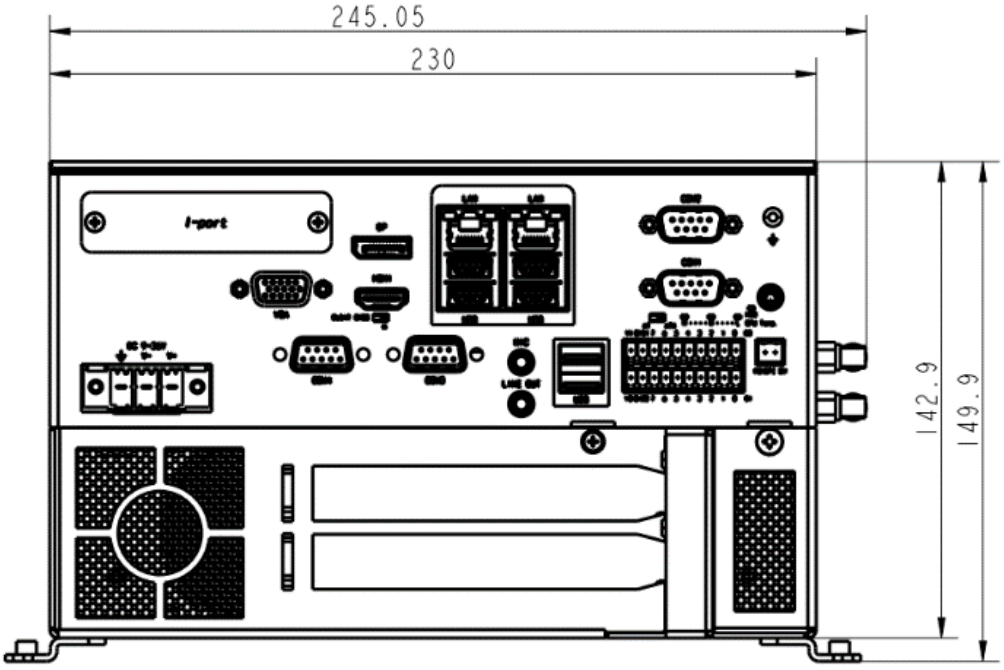

Figure 1.3

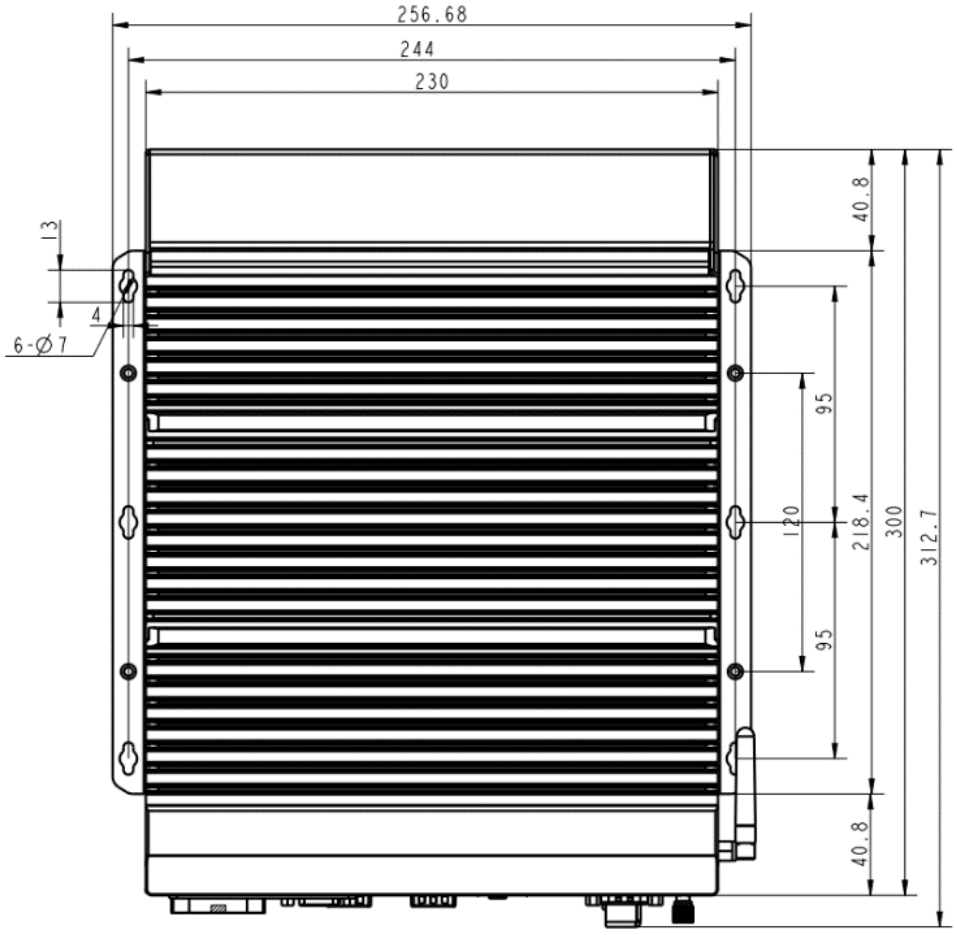

Figure 1.4

KMDA-7610-S001 Dimension : **Unit: mm**

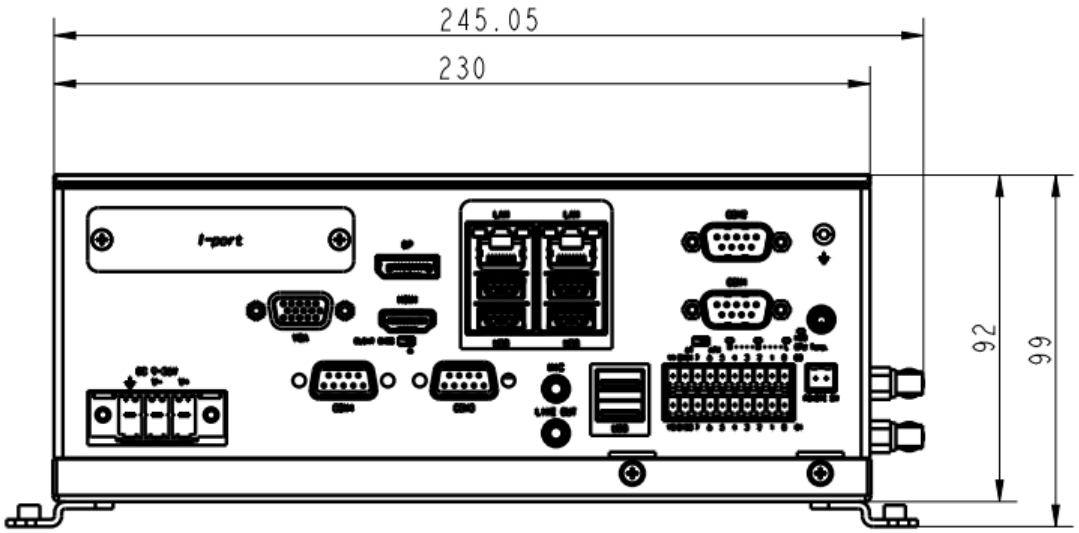

Figure 1.5

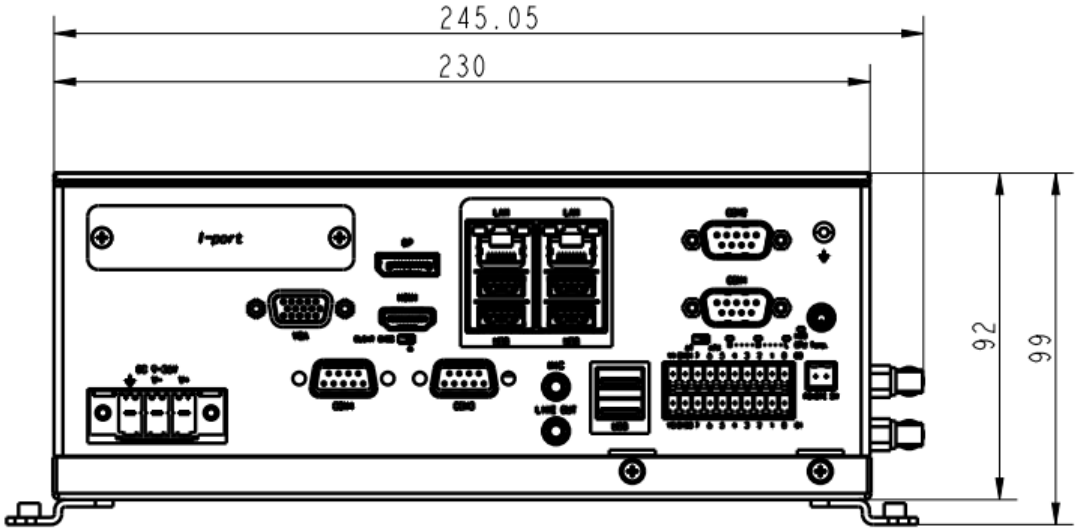

Figure 1.6

CHAPTER 2

Hardware Installation

2.1 Introduction

The following chapters will state the panel DIP switch settings and external connectors and pin assignments of the product.

2.2 Panel DIP switch settings

The KMDA-7921/7920/7610 high-performance box computer is equipped with a simple dip switch on the motherboard. This simple dip switch can be toggle with small tweezers or card pins, which is convenient for users to set according to different configuration requirements. The following table lists the functions of each dip switch on the motherboard.

DIP switch list:

Name	Function	Description
CLEAR/CMOS	Clear CMOS Data Setting	3-Pin switch
AT/ATX	Set Power-on mode at AT or ATX	3-Pin switch

2.2.1 CLEAR/COMS Data clear switch

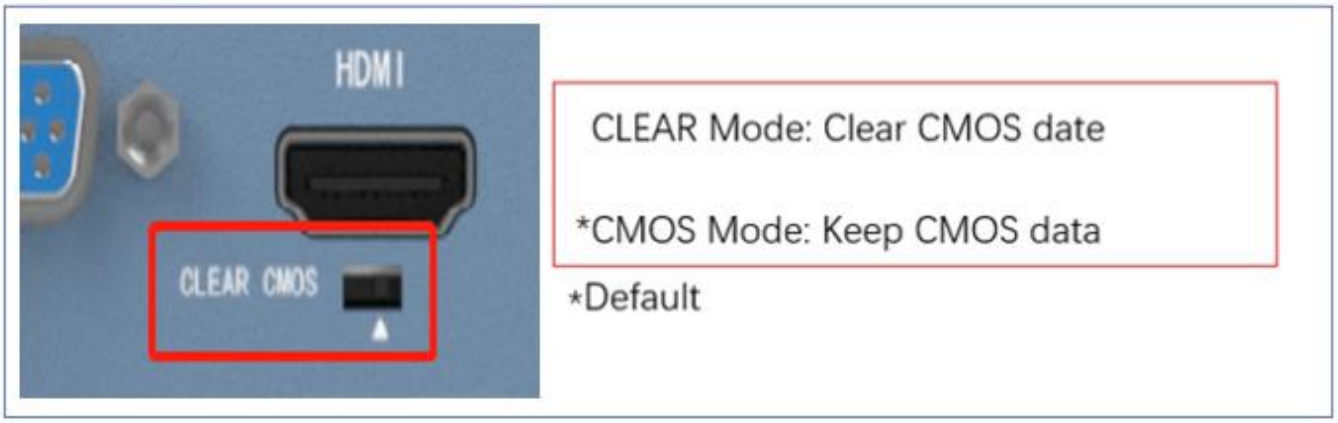

Figure 2.1

The CMOS is powered by the socket BAT battery. Clearing CMOS will permanently erase the previous system settings and set them to the original (factory settings) system settings.

When you encounter the following problems:

a) COMS data is messy and lost;

b) Forgot the super password and user password;

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below :

(1) Turn off the computer and disconnect the power supply;

(2) Toggle the DIP switch to CLEAR mode, stay for 5~6 seconds, and then return to CMOS mode;

(3) Start the computer, press the Del key to enter the BIOS settings during startup, and reload the optimal default values;

(4) Save and exit the setting.

2.2.2 AT/ATX Power-on mode selection switch

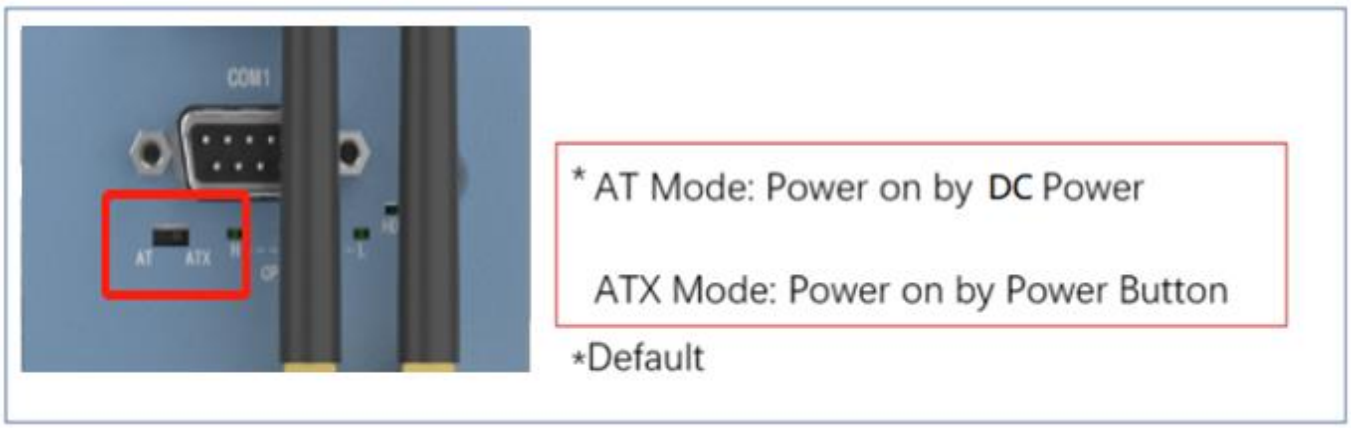

Figure 2.2

KMDA-7921/7920/7610 provides an AT/ATX switch, which users can use tweezers to toggle the dial switch to set the machine's startup mode. When you set it to AT mode, it means that you can turn on the machine by connecting to the DC power supply; When dialed to ATX, it means turning on the machine through the power button.

2.3 I/O Interface and LED light

KMDA-7921-S001 front view:

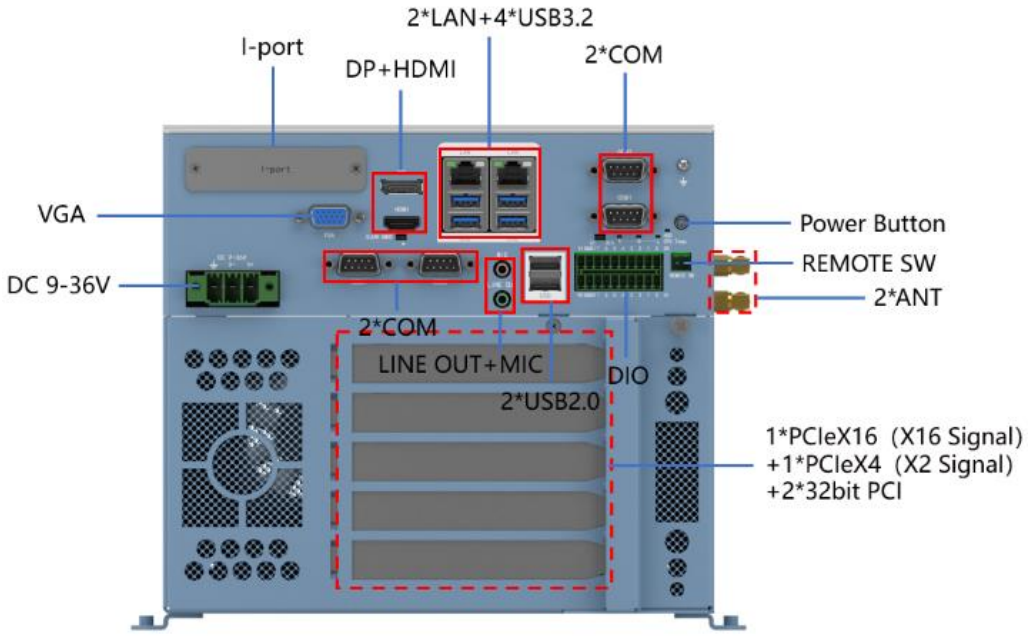

Figure 2.3

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP, 1*HDMI, 1*VGA
- 2*USB2.0 Type A, 4*USB3.2 Type A, 1*I-Port
- 2*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit isolation DIO: 2*10 Pin connector
- 1*PCIeX4（X2 signal）, 1*PCIeX16（X16 signal）, 2*PCI slots
- Power button
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

KMDA-7921-S001 Side Panel:

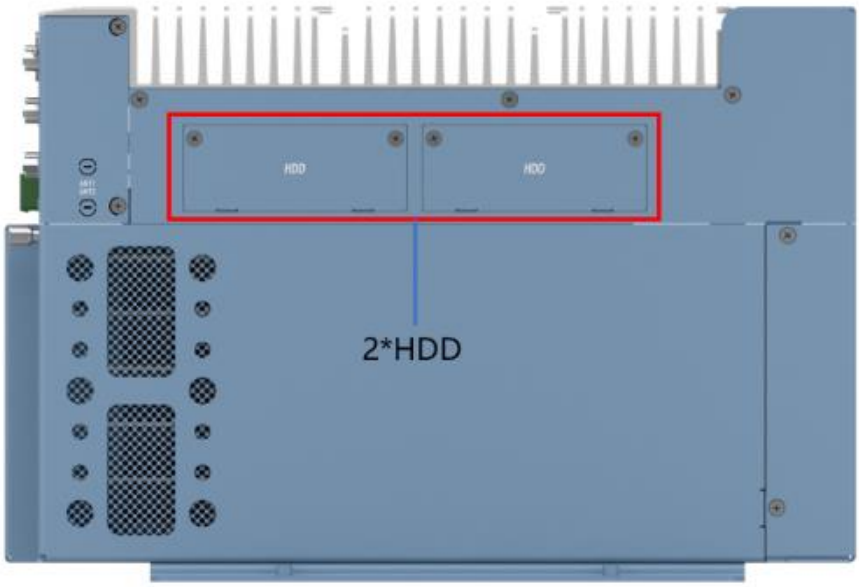

Figure 2.4

I/O ports on the side panel:

- 2*SATA SSD/HDD
- 2*ANT

KMDA-7920-S001 front view:

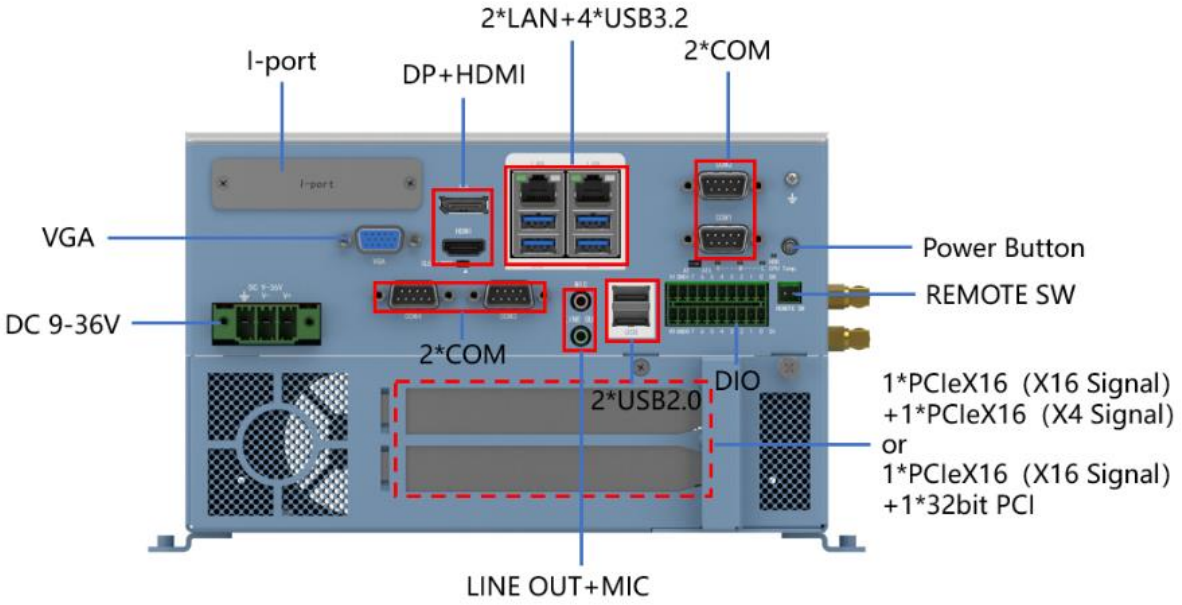

Figure 2.5

I/O ports on the front panel:

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- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP, 1*HDMI, 1*VGA
- 2*USB2.0 Type A, 4*USB3.2 Type A, 1*I-Port
- 2*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit iso. DIO: 2*10 Pin connector
- 1*PCIeX16（X16 signal）+1*PCIeX16（X4 signal）or 1*PCIeX16（X16 signal）+1*32bit PCI
- Power button
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

KMDA-7920-S001 Side Panel:

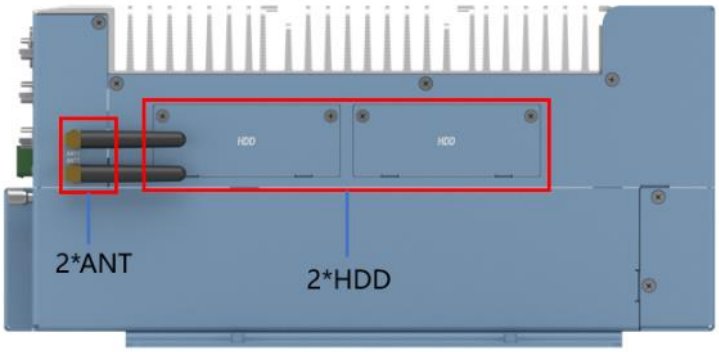


Figure 2.6

I/O ports on the side panel:

- 2*SATA SSD/HDD
- 2*ANT

KMDA-7610-S001 front view:

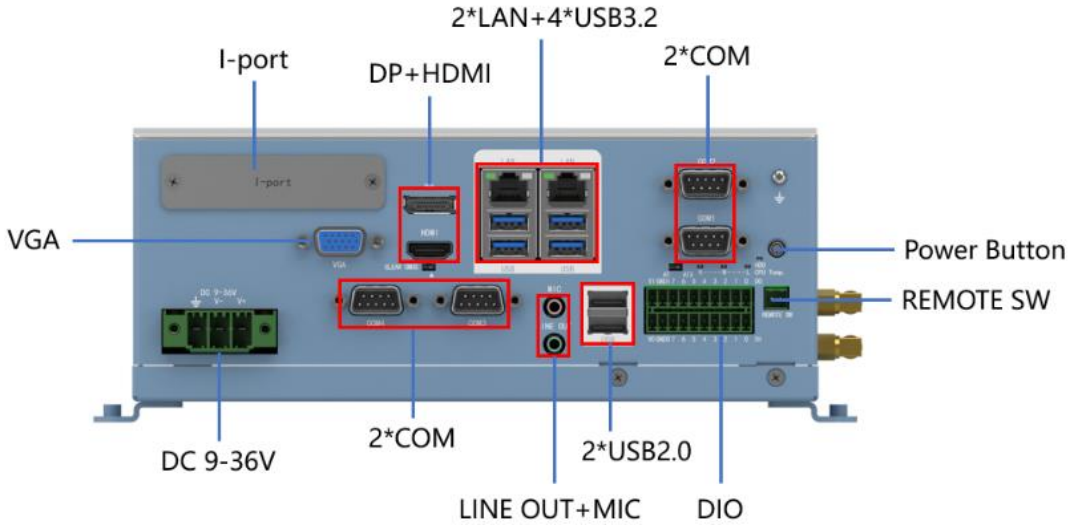


Figure 2.7

I/O ports on the front panel:

- 1*DC-in Power jack: 3-pole Phoenix terminal block
- 1*Remote SW: 2-pole terminal block
- 1*Mic, 1*Line out: 3.5mm phone jack
- 1*DP, 1*HDMI, 1*VGA
- 2*USB2.0 Type A, 4*USB3.2 Type A, 1*I-Port
- 2*Gigabit LAN: RJ45 with LEDs
- 4*COM: DB9 2*RS232, 2*RS232/422/485
- 16-bit iso. DIO: 2*10 Pin connector

- Power button
- HDD LED, CPU LEDs
- AT/ATX SW, Clear CMOS SW

KMDA-7610-S001 Side Panel:

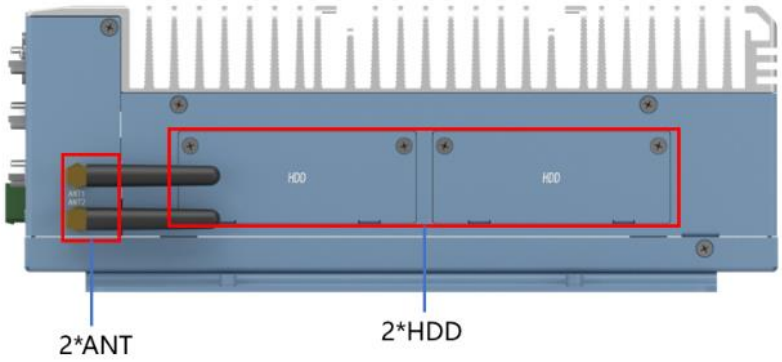


Figure 2.8

I/O ports on the side panel:

- 2*SATA SSD/HDD
- 2*ANT

2.3.1 Ethernet port（LAN）

The KMDA-7921/7920/7610 is equipped with 1*Intel® I226V network chip and 1*Intel® I219LM network chip, providing two Gigabit network ports and supporting 10/100/1000Mbps rate adaptive. The Ethernet provides a standard RJ-45 interface with LED indicators, which are used to indicate the activity status of the network port. Table 2.1 describes the detailed pin assignment.

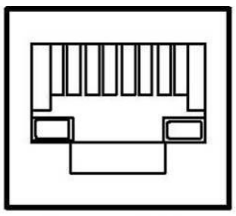


Figure 2.9 Ethernet port

Table 2.1: RJ-45 Port Pin Assignments

Pin	10/100/1000BaseT Signal	Pin	10/100/1000BaseT Signal
1	TX+(10/100), LAN_DA+(GHz)	5	LAN_DC-(GHz)
2	TX-(10/100), LAN_DA-(GHz)	6	RX-(10/100), LAN_DB-(GHz)
3	RX+(10/100), LAN_DB+(GHz)	7	LAN_DD-(GHz)
4	LAN_DC+(GHz)	8	LAN_DD-(GHz)

2.3.2 USB Interface

The KMDA-7921/7920/7610 supports 6*USB ports, including 4*USB3.2 and 2*USB2.0. These USB interface connectors support plug-and-play and hot-swappable capabilities and can be disabled through system BIOS settings. Table 2.2 provides a detailed description of pin assignment for USB2.0.

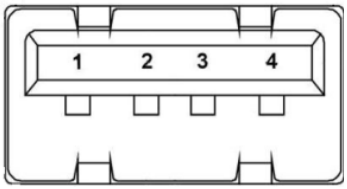


Figure 2.10 USB2.0

Table 2.2: USB2.0 Port Pin Assignments

Pin	Signal	Pin	Signal
1	USB_VCC	2	USB_D-
3	USB_D+	4	USB_GND

Table 2.3 provides a detailed description of pin assignment for USB3.2.

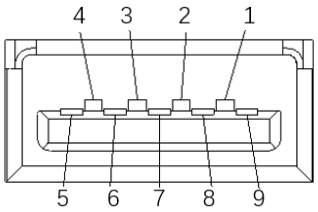


Figure 2.11 USB3.2

Table 2.3: USB3.2 Port Pin Assignments

Pin	Signal	Pin	Signal
1	VBUS	6	StdA_SSRX+
2	D-	7	GND_DRAIN
3	D+	8	StdA_SAXM-
4	GND	9	StdA_SAXM+
5	StdA_SSRX-	Shell	Shield

2.3.3 HDMI

The KMDA-7921/7920/7610 provides a high resolution HDMI display interface with a maximum resolution of 4096*2160@60Hz. Table 2.4 describes the detailed pin assignment.

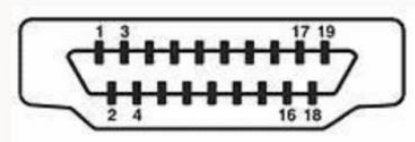


Figure 2.12 HDMI

Table 2.4: HDMI Port Pin Assignments					
Pin	Signal	Pin	Signal	Pin	Signal
1	DATA2_P	8	GND	15	SCL
2	GND	9	DATA0_N	16	SDA
3	DATA2_N	10	CLK_P	17	GND
4	DATA1_P	11	GND	18	VCC
5	GND	12	CLK_N	19	DETECT
6	DATA1_N	13	NC		
7	DATA0_P	14	NC		

Note: NC indicates no connection

2.3.4 DP

The KMDA-7921/7920/7610 provides a high-resolution DP interface that supports a maximum resolution of 4096*2304@60Hz. Table 2.5 describes the detailed pin assignment.

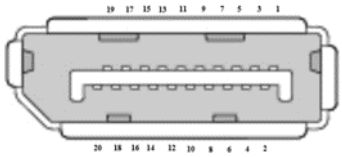


Figure 2.13 DP

Table 2.5: DP Port Pin Assignments					
Pin	Signal	Pin	Signal	Pin	Signal
1	DATA0_P	8	GND	15	AUXP
2	GND	9	DATA2_N	16	GND
3	DATA0_N	10	DATA3_P	17	AUXN
4	DATA1_P	11	GND	18	HPD
5	GND	12	DATA3_N	19	GND
6	DATA1_N	13	CTRL	20	PWR
7	DATA2_P	14	GND		

2.3.5 VGA

The KMDA-7921/7920/7610 provides a standard VGA interface that supports a maximum resolution of 1920*1200@60Hz. Table 2.6 provides detailed pin assignment.

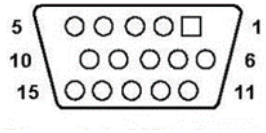


Figure 2.14 VGA

Table 2.6: VGA Port Pin Assignments

Pin	Signal	Pin	Signal
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	SDA
5	GND	13	HS
6	GND	14	VS
7	GND	15	SCL
8	GND		

2.3.6 COM1/2/3/4 Port

The KMDA-7921/7920/7610 provides 2*COM interface (COM1/2) through a dual-layer DB9, and RS232/422/485 mode can be set through the BIOS, and provides 2*RS232 serial port (COM3/4) through two single-row DB9 ports. Table 2.7 provides a detailed description of pin assignment for COM1/2. Table 2.8 provides a detailed description of pin assignment for COM3/4.

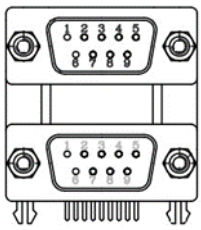


Figure 2.15 COM1/2

Table 2.7: COM1/COM2 Port Pin Assignments

Pin	RS-232 Signal	RS-422 Signal	RS-485 Signal
1	DCD	TX-	DATA-
2	RxD	TX+	DATA+
3	TxD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND

6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

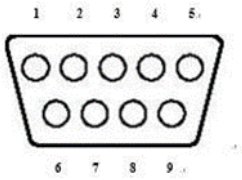


Figure 2.16 COM3/4

Table 2.8: COM3/COM4 Port Pin Assignments			
Pin	Signal	Pin	Signal
1	COM_DCD	2	COM_SIN3
3	COM_SOUT	4	COM_DTR
5	GND	6	COM_DSR
7	COM_RTS	8	COM_CTS
9	COM_RI		

2.3.7 DIO Port

KMDA-7921/7920/7610 provides 16-bit isolated DIO through one 2*10Pin connector.

Table 2.9 provides a detailed description of pin assignments.

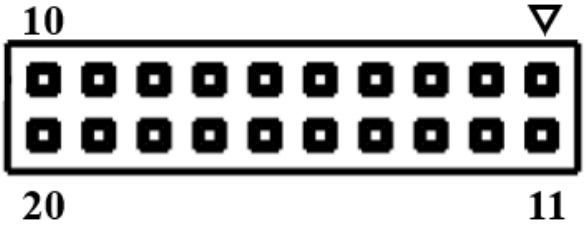


Figure 2.17 DIO

Table 2.9: DIO Port Pin Assignments			
Pin	DIO Signal	Pin	DIO Signal
1	DI0	11	DOUT0
2	DI1	12	DOUT1
3	DI2	13	DOUT2
4	DI3	14	DOUT3
5	DI4	15	DOUT4

6	DI5	16	DOUT5
7	DI6	17	DOUT6
8	DI7	18	DOUT7
9	ECOM1	19	E_GND
10	VCC_ISO	20	PCOM1

2.3.8 SATA Port

The KMDA-7921/7920/7610 provides two standard SATA3.0 interfaces with data transfer rates up to 6Gb/s for connecting SATA devices. Table 2.10 provides a detailed description of pin assignments.

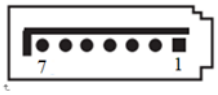


Figure 2.18 SATA

Table 2.10: SATA Port Pin Assignments

Pin	Signal	Pin	Signal
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

2.3.9 SATA Power Interface

Table 2.11 describes detailed pin assignments for SATA power interface.

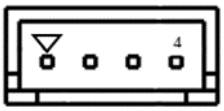


Figure 2.19 SATA power port

Table 2.11: SATA Power Port Pin Assignments

Pin	Signal	Pin	Signal
1	5V	3	GND
2	GND	4	12V

Warning: ensure that pin-1 of SATA power connector has been inserted into pin-1 of corresponding plug to avoid damaging board and hard disk drive.

2.3.10 Remote Switching Interface

The remote switch signal interface used for switching on and off the machine. The pin definition is

shown in Table 2.12.

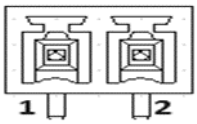


Figure 2.20 Remote SW

Table 2.12: Remote Switch Signal Interface Pin Assignments	
Pin	Signal
1	PWR_BTN
2	GND

2.3.11 Mini PCIe

KMDA-7921/7920/7610 provides a standard full size Mini PCIe interface with PCIeX1 and USB2.0 signals, SIM card slot, and can install functional module cards such as 4G cards, network cards, and serial cards that comply with the Mini PCIe specification. Table 2.13 provides a detailed introduction to pin allocation.

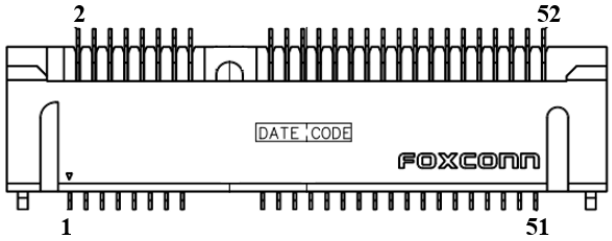


Figure 2.21 Mini PCIe

Table 2.13: Mini-PCIe Interface Pin Assignments			
Pin	Signal	Pin	Signal
1	PCIE_WAKE_N	2	+V3.3_MINICARD2
3	NC	4	GND
5	NC	6	+V1.5
7	CLKREQ#	8	+VUIM_PWR
9	GND	10	UIM_DATA
11	CLK_MIO1_PCIE-	12	UIM_CLK
13	CLK_MIO1_PCIE+	14	UIM_RESET
15	GND	16	+VUIM_VPP
17	NC	18	GND
19	NC	20	WIFI2_DISABLE#
21	GND	22	PLTRST#
23	PCIE_MINI_RX2-	24	+V3.3_MINICARD2
25	PCIE_MINI_RX2+	26	GND

27	GND	28	+V1.5
29	GND	30	SMB_SCL_RSM
31	PCIE_MINI_TX2-	32	SMB_SDA_RSM
33	PCIE_MINI_TX2+	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+V3.3_MINICARD2	40	GND
41	+V3.3_MINICARD2	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+V1.5
49	NC	50	GND
51	NC	52	+V3.3_MINICARD2

2.3.12 LED Light

KMDA-7610/7920/7921 panel has one power indicator, one hard disk indicator, four network link status indicators and three CPU operating temperature indicators. When the working temperature of CPU is ≤ 85 ℃, the green light is on; When the temperature of CPU is between 86 ℃ and 95 ℃, the yellow light is on, and when the working temperature of CPU is ≥ 96 ℃, the red light is on. If you keep the CPU working under the red light, it will affect the service life of the machine.

Figure 2.22

2.3.13 Power Interface (DC-IN)

The KMDA-7610/7920/7921 provides a wide voltage (9~36V) input via a 3-pin 7.62mm pitch terminal. Table 2.14 provides a detailed description of pin assignments..

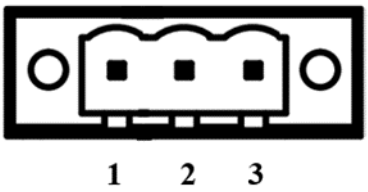


Figure 2.23 DC IN

Table 2.14: DC-IN Port Pin Assignments

Pin	Signal	Pin	Signal
1	9~36V	2	NC
3	GND		

2.4 Installation

The KMDA-7921 is used as an example for hardware installation. The KMDA-7920/7610 series is similar.

2.4.1 HDD/SSD Install

Step 1: Unscrew the four screws on the disk cover and remove the disk cover.

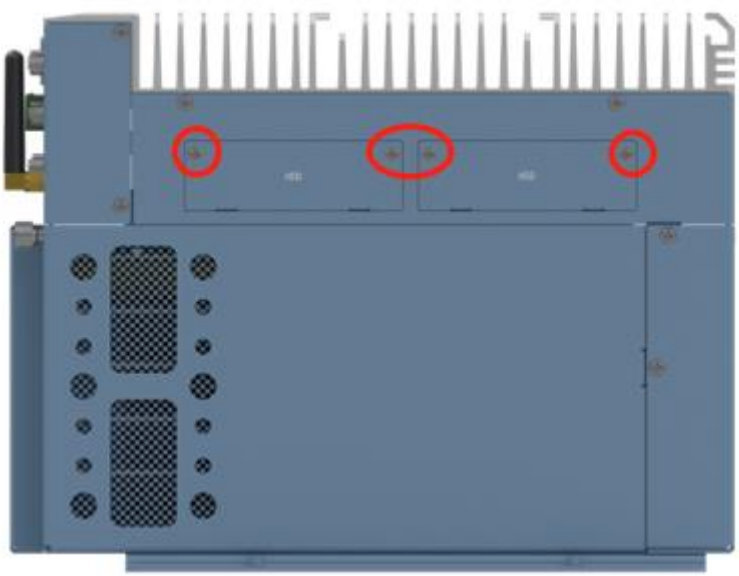


Figure 2.24

Step 2: Unscrew the two screws on the hard disk tray and remove the hard disk tray.

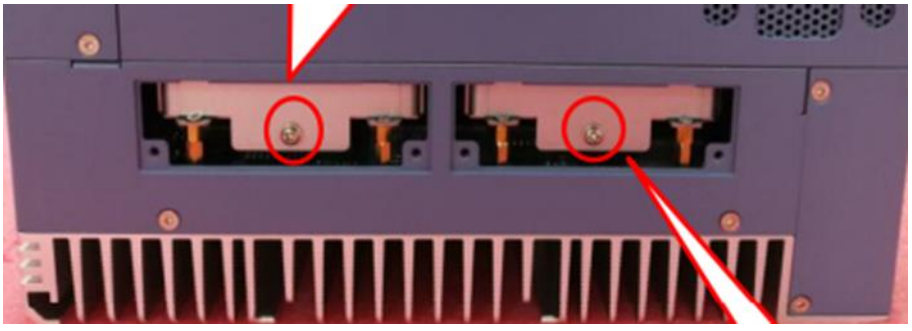


Figure 2.25

Step 3: Install the HDD or SSD in the hard disk tray, tighten the four screws to secure them.

Figure 2.26

Figure 2.27

Step 4: Insert the hard disk and the hard disk tray into the hard disk slot, as shown in the figure.

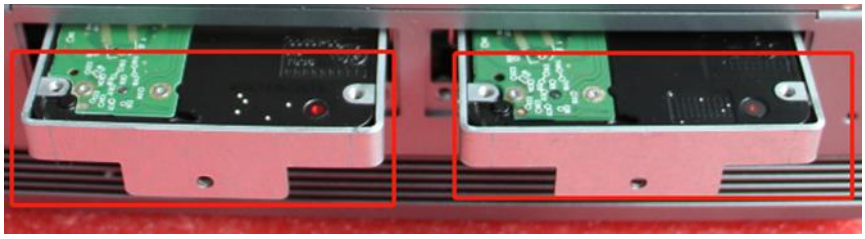


Figure 2.28

Step 5: Tighten one screw to secure the hard disk and the hard disk tray.

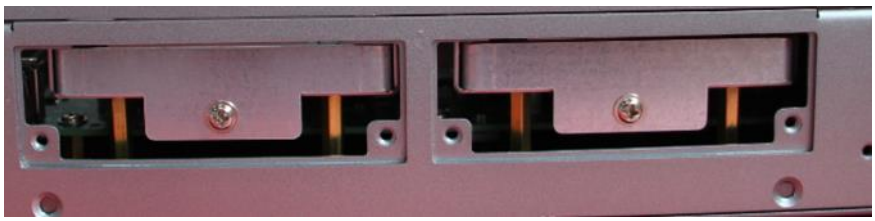


Figure 2.29

Step 6: Install the hard disk cover and tighten the 4 screws.

2.4.2 Mini PCIe/mSATA Module Install

(KMDA-7921/7920):

Step 1: Loosen the screws shown in the figure and remove the expansion cover.

Figure 2.30

Figure 2.31

Step 2: Unscrew the 6 screws on the expansion box and remove the expansion box.

Figure 2.32

Figure 2.33

Step 3: Hold the Mini PCIe/mSATA module so that its slot aligns with the Mini PCIe/mSATA slot on the motherboard, insert it into the socket at a 30 degree angle, and lock the screw to secure it.

Figure 2.34

Step 4: Complete the installation of the machine with the reverse steps.

(KMDA-7610):

Step 1: Unscrew the 7 screws on the bottom cover (4 at the front and back, 3 at the side) as shown in the figure and remove the bottom shell.

Figure 2.35

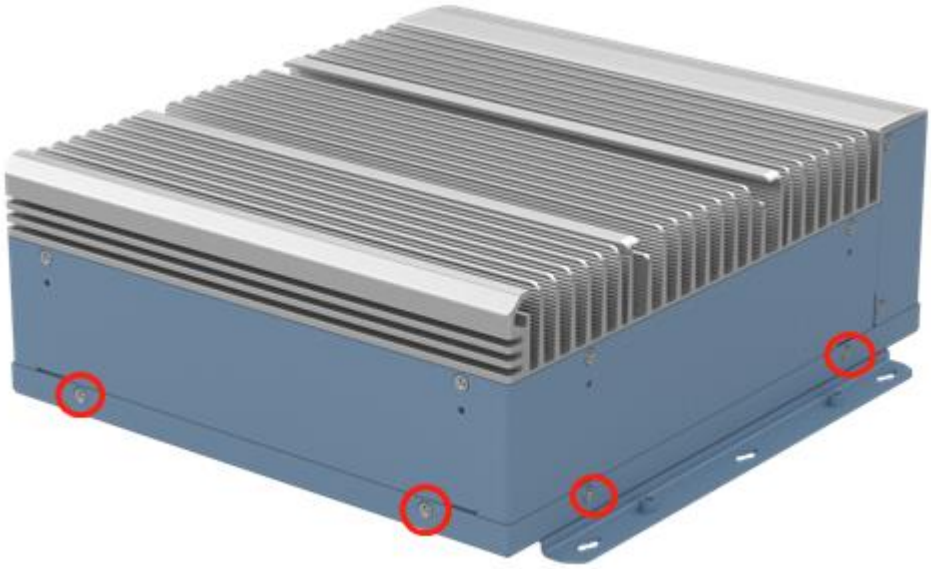


Figure 2.36

Step 2: Hold the Mini PCIe/mSATA module so that its slot aligns with the Mini PCIe/mSATA slot on the motherboard, insert it into the socket at a 30 degree angle, and lock the screw to secure it.

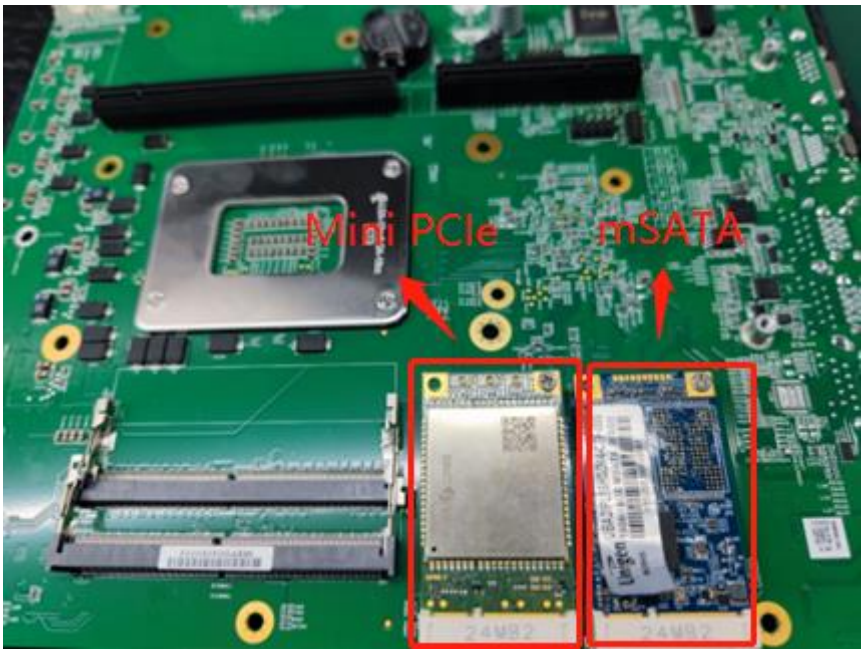


Figure 2.37

Step 3: Complete the installation of the machine with the reverse steps.

CHAPTER 3

BIOS Setup

3.1 BIOS Description

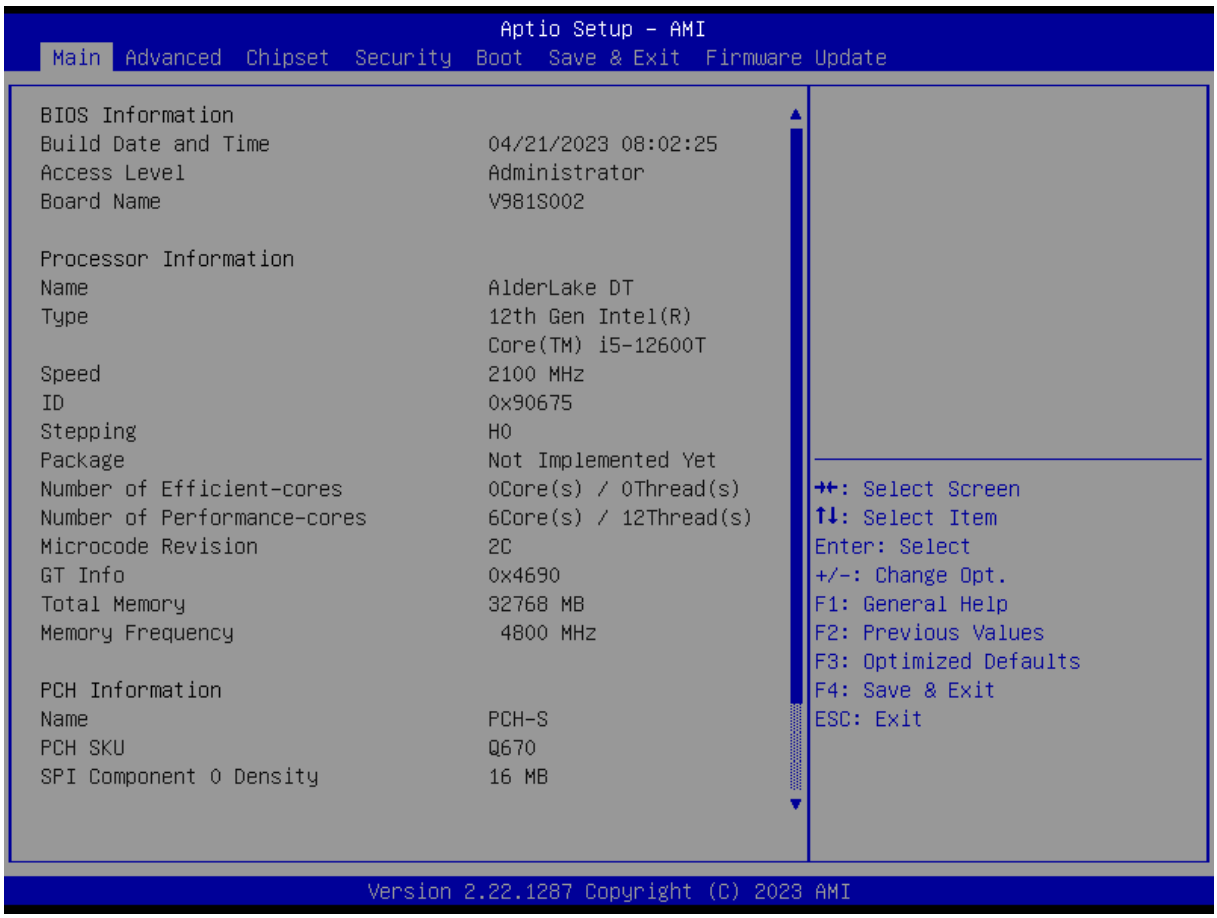
BIOS is the communication bridge between hardware and software. How to correctly set the BIOS parameters is crucial for the system to work stably and whether the system works at its best.
This chapter describes how to change the system settings through the BIOS settings.
Note: For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS.

You need to make SETUP settings as follows:
1. An error message appears on the screen during the system self-test and asks for the SETUP setting.
2. You want to change the factory default settings based on customer characteristics.
(But in general, customers are not recommended to set it up. In most cases, using the default value is already the best setting.)

The BIOS Setup Utility enables you to configure:
- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

3.1.1 Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self-Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, Press the "**DEL**" key to enter BIOS Setup Utility.



3.2 BIOS parameter settings

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

3.2.1 BIOS Navigation Keys

Enter the SETUP settings interface, The BIOS navigation keys are listed below:

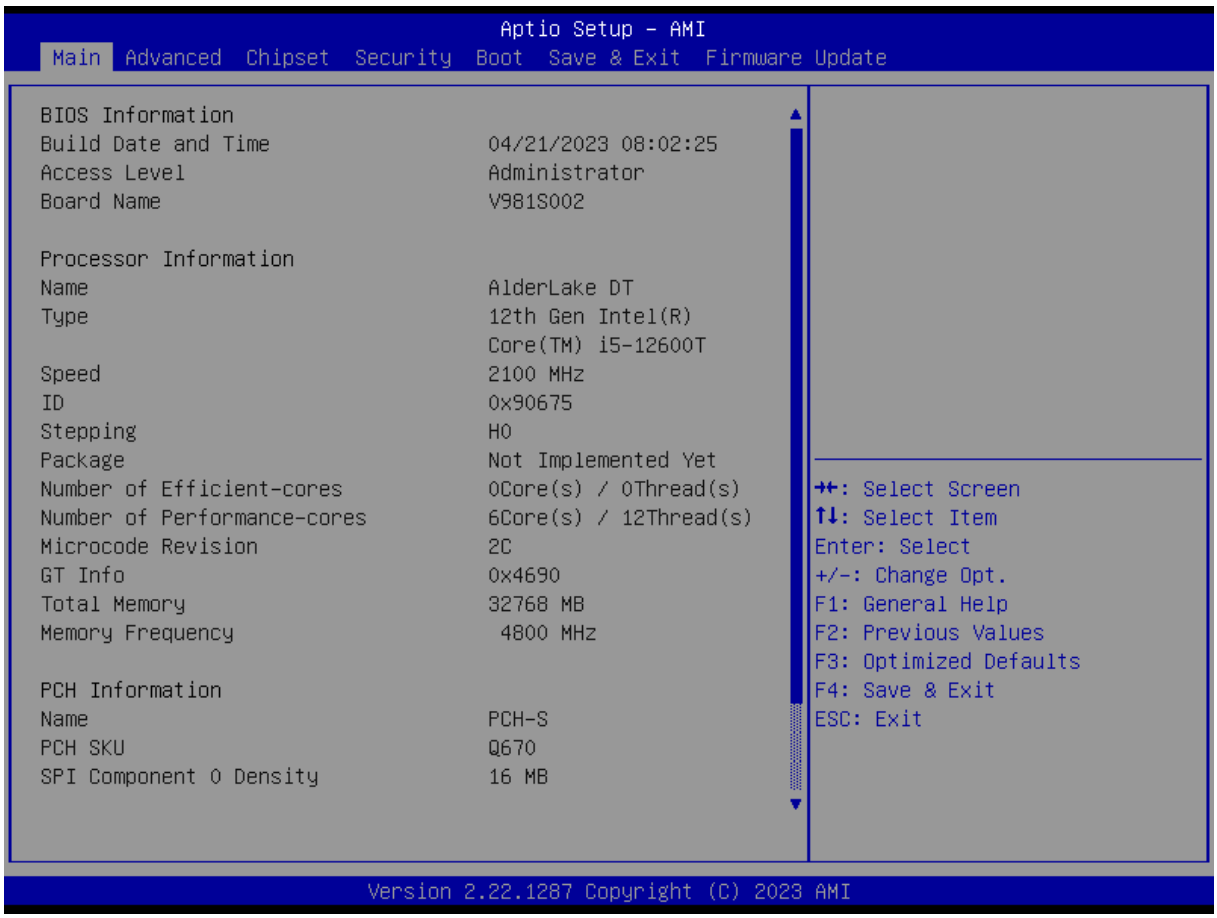
Table 3.1: The BIOS navigation keys

KEY	FUNCTION
ESC	Exit the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit

3.2.2 Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu. Press <Esc> to back to the main menu.

The BIOS setup program provides a help screen. You can call up this help screen from any menu by simply pressing the <F1> key. This help screen lists the corresponding keys and possible selections. Press <Esc> to exit the help screen.


Aptio Setup – AMI
Main Advanced Chipset Security Boot Save & Exit Firmware Update
BIOS Information
Build Date and Time 04/21/2023 08:02:25
Access Level Administrator
Board Name V981S002
Processor Information
Name AlderLake DT
Type 12th Gen Intel(R) Core(TM) i5-12600T
Speed 2100 MHz
ID 0x90675
Stepping H0
Package Not Implemented Yet
Number of Efficient-cores 0Core(s) / 0Thread(s)
Number of Performance-cores 6Core(s) / 12Thread(s)
Microcode Revision 2C
GT Info 0x4690
Total Memory 32768 MB
Memory Frequency 4800 MHz
PCH Information
Name PCH-S
PCH SKU Q670
SPI Component 0 Density 16 MB
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Aptio Setup – AMI
Main Advanced Chipset Security Boot Save & Exit Firmware Update
Set the Time. Use Tab to switch between Time elements.
Processor Information
Name AlderLake DT
Type 12th Gen Intel(R) Core(TM) i5-12600T
Speed 2100 MHz
ID 0x90675
Stepping H0
Package Not Implemented Yet
Number of Efficient-cores 0Core(s) / 0Thread(s)
Number of Performance-cores 6Core(s) / 12Thread(s)
Microcode Revision 2C
GT Info 0x4690
Total Memory 32768 MB
Memory Frequency 4800 MHz
PCH Information
Name PCH-S
PCH SKU Q670
SPI Component 0 Density 16 MB
System Language [English]
System Date [Thu 04/27/2023]
System Time [18:14:26]
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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BIOS Information

This item shows the information of the BIOS vendor, version, build date and time etc.

Board Information

This item shows the basic information of the motherboard, including the Board ID and BIOS Version of the motherboard.

Processor Information

This item shows the basic information about the currently used processor, including name, type, speed, ID, core, Microcode version, etc.

Total Memory

This item shows the total memory size of the current motherboard.

Memory Frequency

This item shows the current memory operating frequency.

PCH Information

This item shows the basic information about PCH, including name, model, type, etc.

System Language

Set the language interface of the BIOS.

System Date

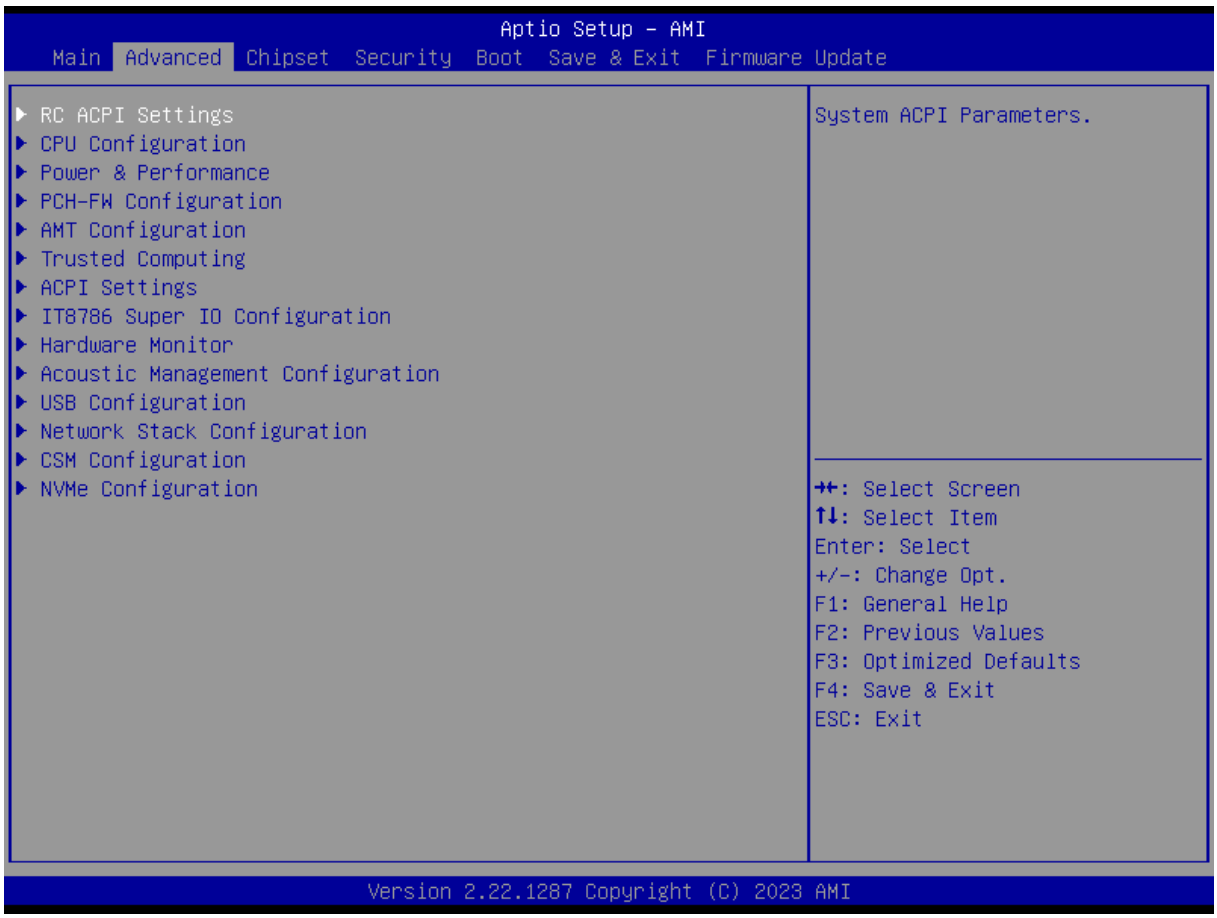
Set the date. The format of the date is <week><month><day><year>.

System Time

Set the time. The format of the time is <hour><minute><second>.

3.2.3 Advanced Menu

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



CPU Configuration

The configuration of the central processor, enter this sub-menu, there will be detailed details of the CPU, as well as various settings of the CPU.

Power & Performance Configuration

This item contains the Power & Performance configuration, enter this sub-menu, there will be detailed details of the Power & Performance, as well as related settings of the Power & Performance function.

AMT Configuration

This item contains the AMT configuration, enter this sub-menu, there will be detailed details of the ATM, as well as related settings of the configure intel (R) Active Management Technology parameters.

Trusted Computing

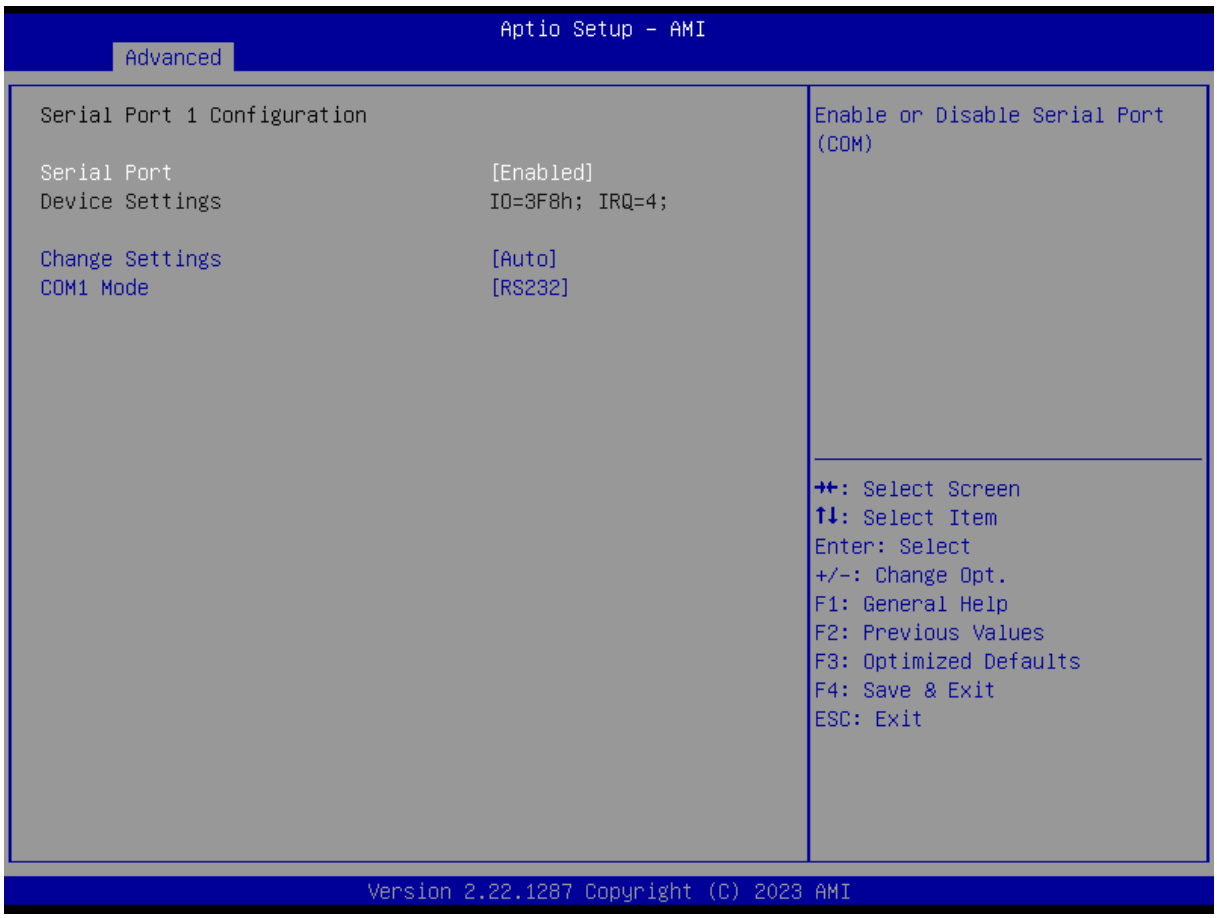
Trusted computing, enter this sub-menu, there will be the setting of the encryption security module (the motherboard will install the encryption module hardware will take effect)

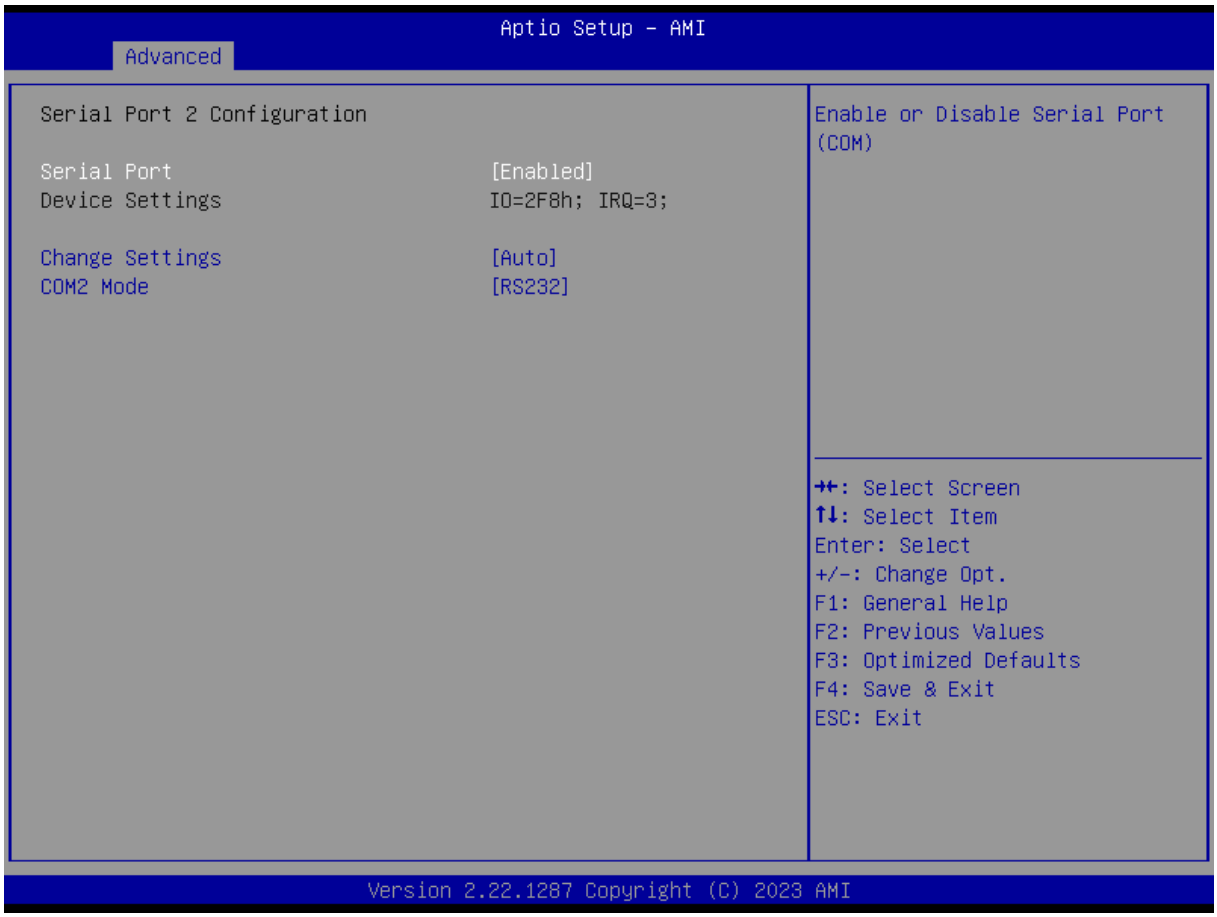
ACPI Settings

Advanced configuration and power management interface settings, enter this submenu, there will be ACPI related settings

IT8786 COM setting

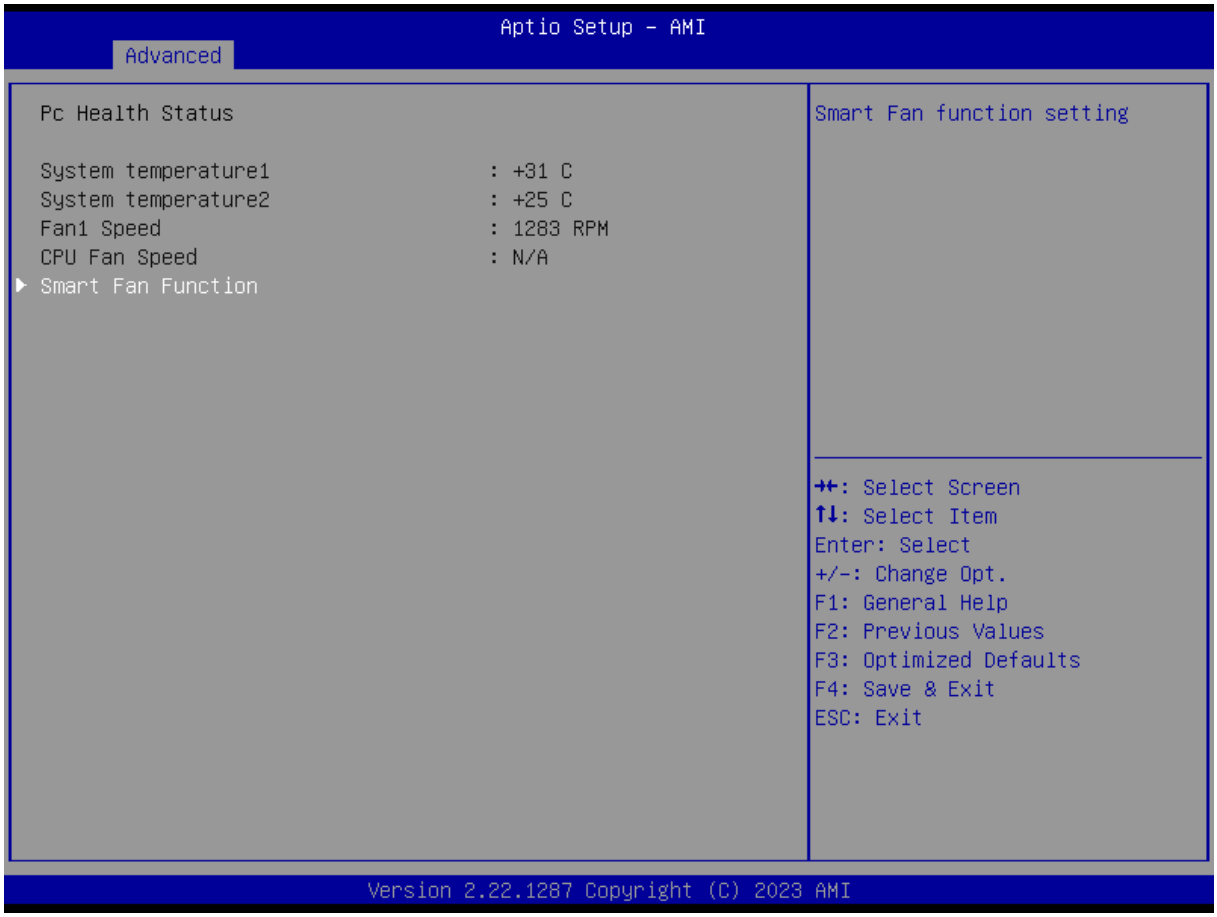
COM port settings, enter this sub-menu, there will be set COM working mode: RS422, RS232, RS485





Hardware Monitor

Hardware monitoring, enter this sub-menu, there will be CPU temperature, fan speed, status display of each common working voltage, as well as parameter settings of intelligent fan control.



CSM Configuration

CSM (Compatibility Support Module) configuration, enter this sub-menu, there will be various settings to support UEFI startup and non-UEFI startup. If you need to start the traditional MBR device, you need to enable CSM. Turning off the CSM turns it into a pure UEFI boot.

USB Configuration

USB configuration, enter this sub-menu, there will be USB-related detailed settings.

NVMe Configuration

NVMe device settings, enter this sub-menu, there will be set NVMe device.

3.2.4 Chipset Menu

The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.

System Agent (SA) Configuration

Memory Configuration

Memory configuration, enter this submenu, there will be detailed memory information.

Graphics Configuration

Image processing configuration, enter this sub-menu, there will be CPU-integrated graphics related settings.

PEG Port Configuration

PEG graphics configuration, enter this sub-menu, there will be related settings for the external graphics card.

PCH-IO Configuration

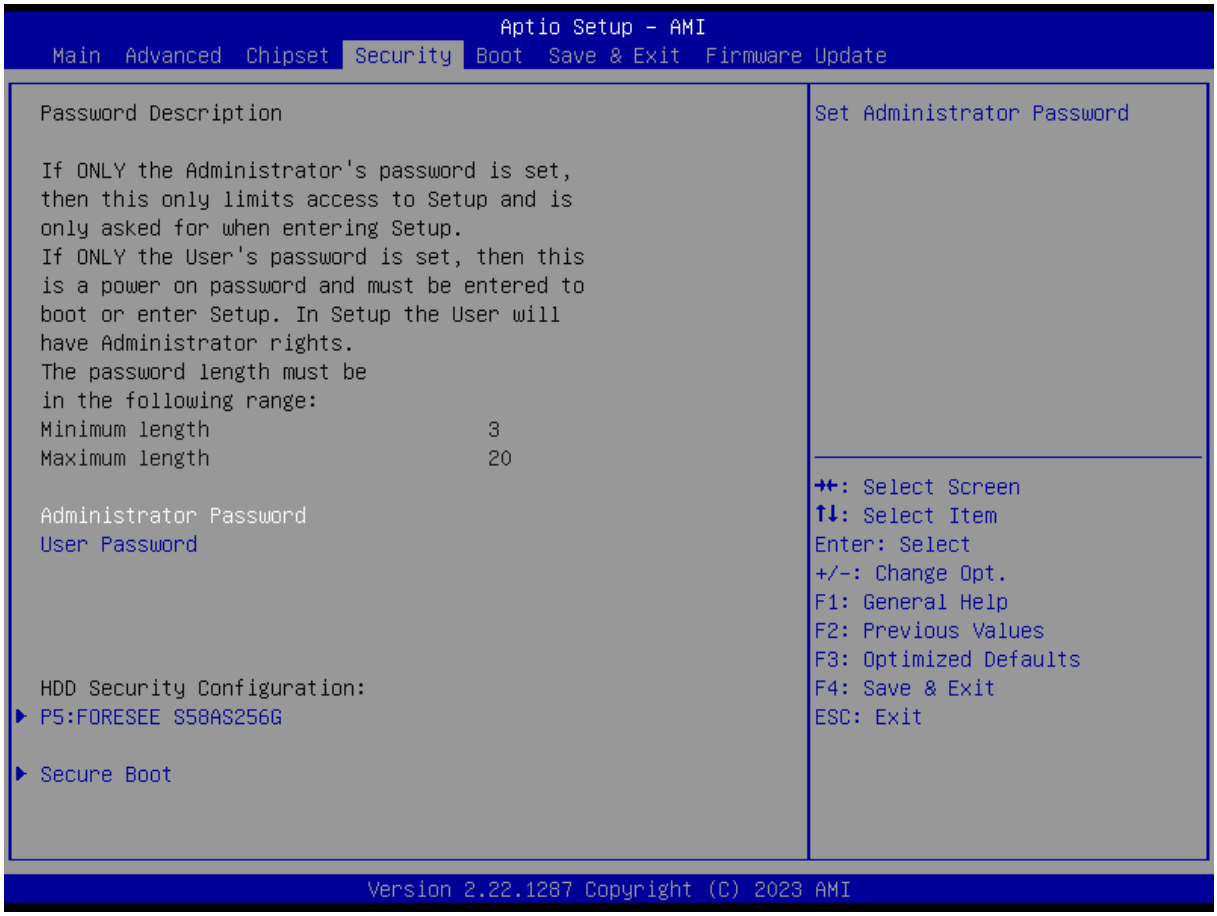
SATA And RST Configuration

SATA hard disk and fast storage configuration, enter this sub-menu, there will be related settings of the hard disk.

HD Audio Configuration

High-fidelity audio, which controls the switch settings of the motherboard's sound card.

3.2.5 Security menu



Administrator Password

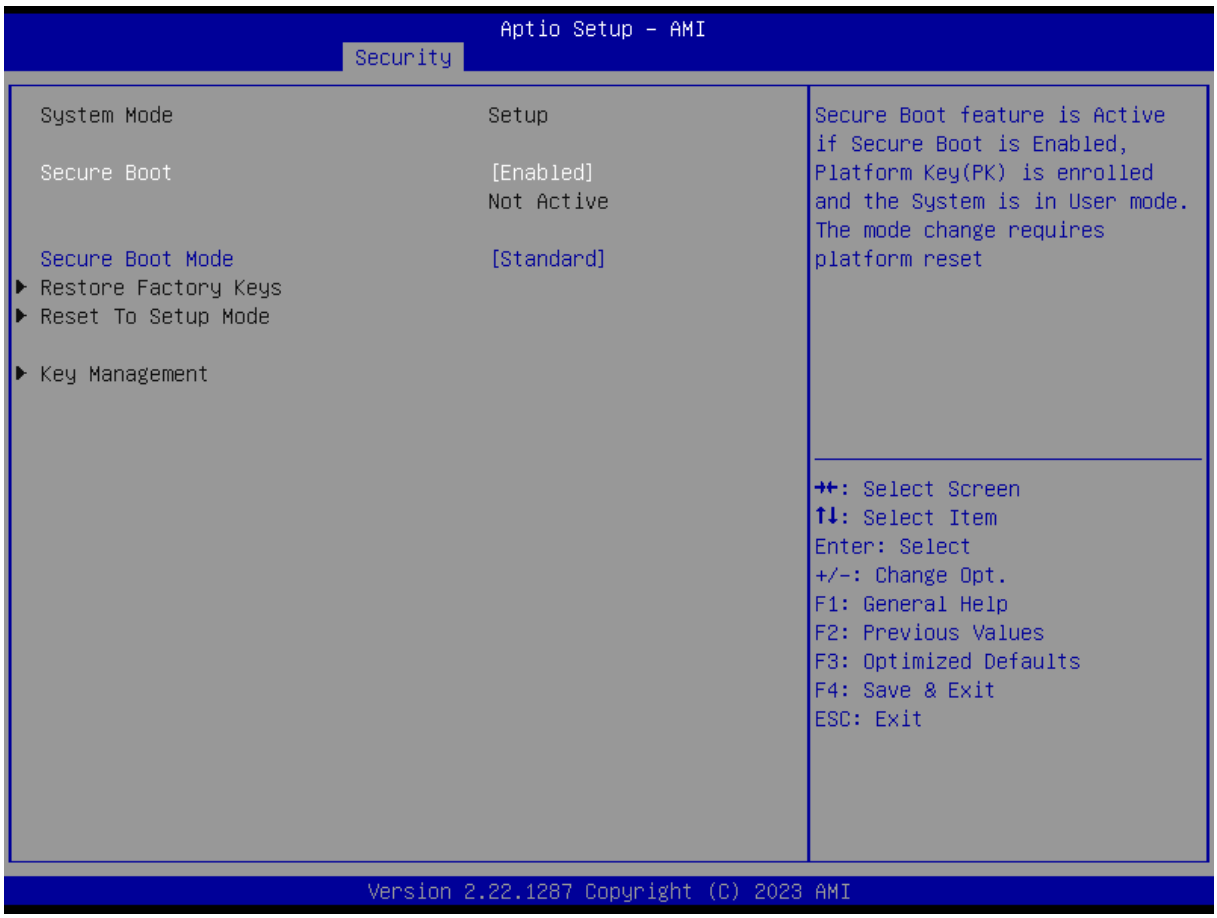
This item sets the information of the administrator password.

User Password

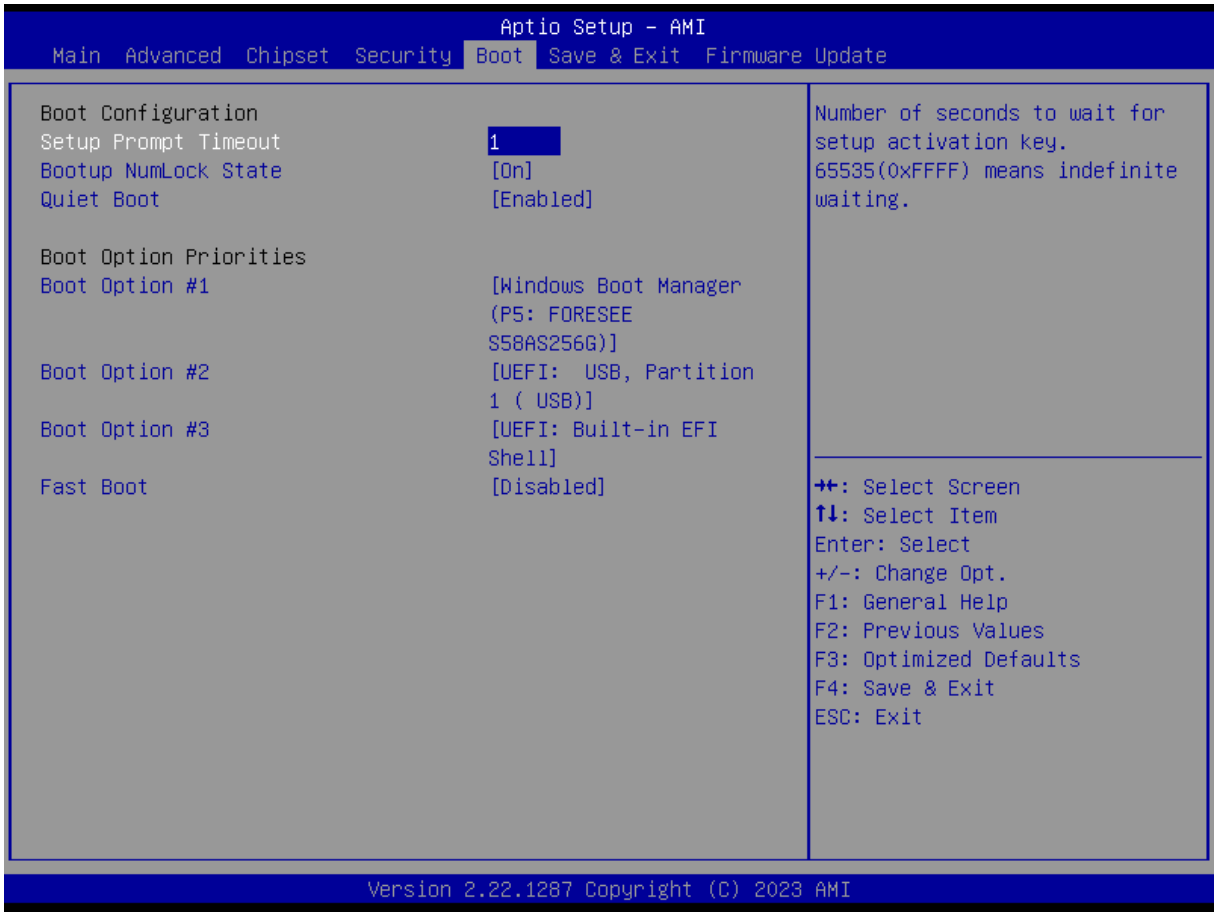
This item sets the information of the normal user password.

Secure Boot

This item sets the information of the secure boot.Secure Boot feature is Actice if Secure Boot is Enabled,Platform key(PK) is enrolled and mode change requires platform reset.


Aptio Setup – AMI
Security
System Mode
Setup
Secure Boot
[Enabled]
Not Active
Secure Boot Mode
[Standard]
Restore Factory Keys
Reset To Setup Mode
Key Management
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1287 Copyright (C) 2023 AMI

3.2.6 Boot menu



Setup Prompt Timeout

Setup prompts for waiting time. This option is to set the time to wait for the Del key to enter the BIOS setup after booting.

Bootup NumLock State

Set the state of the small numeric keypad at startup.

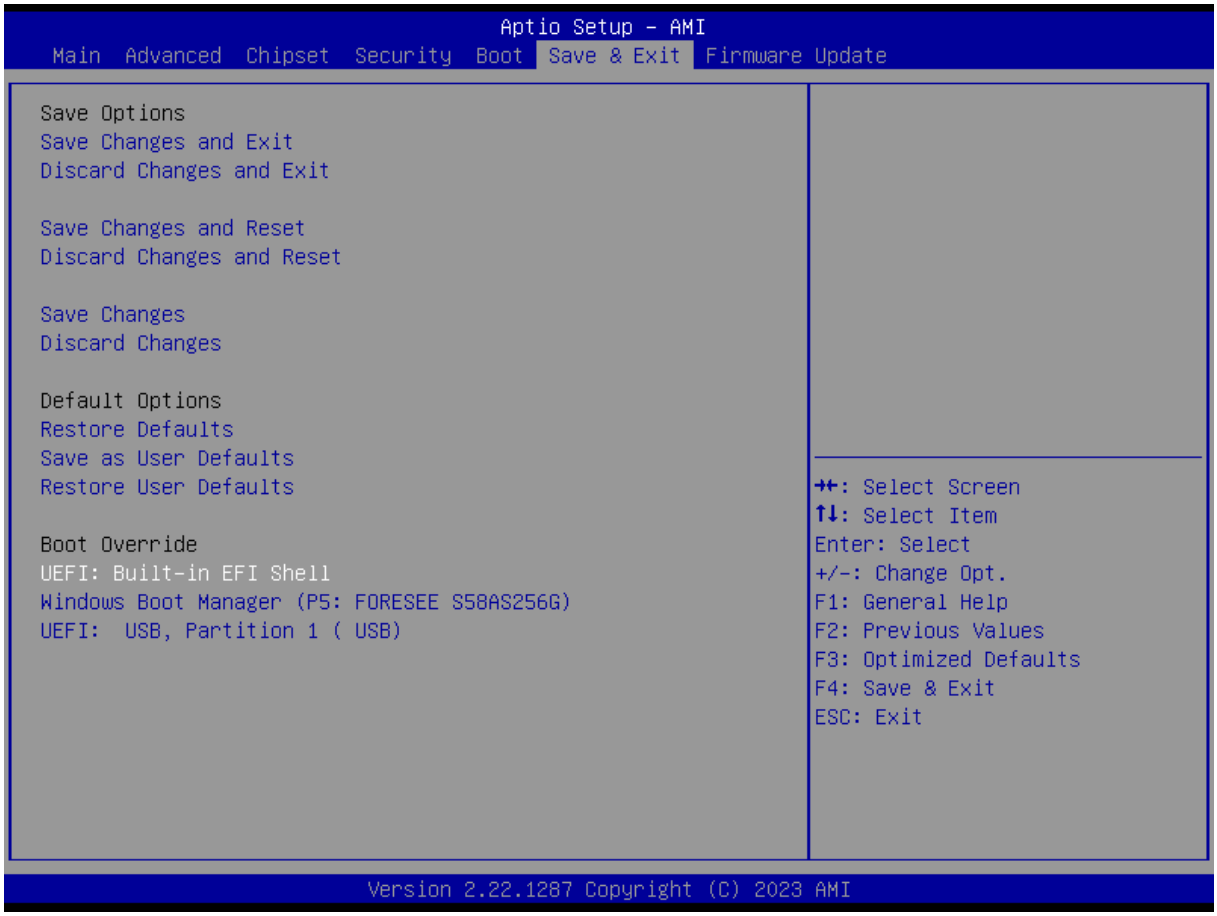
Quiet Boot

Switch full screen logo control.

Set Boot Priority

Start device priority settings. If the user wants to install the operating system, please set "Boot Option #1" as your CD-ROM device or your U disk device (make sure that your CD-ROM drive has an operating system or your U disk has a PE system). After the setting is completed, press the “F4” button to save and exit. The system will boot from your CD-ROM drive or USB flash drive.

3.2.7 Save & Exit menu



Save changes and Exit

This item enables you to save the changes that you have made and exit.

Discard Changes and Exit

This item enables you to discard the changes that you have made and exit.

Save Changes and Reset

This item enables you to save the changes that you have made and reset.

Discard Changes and Reset

This item enables you to discard the changes that you have made and reset.

Save Changes

This item enables you to save the changes that you have made.

Discard Changes

This item enables you to discard the changes that you have made.

Restore Defaults

This item enables you to restore the system defaults.

Save as User Defaults

This item enables you to save the changes as user defaults that you have made.

Restore User Defaults

This item enables you to restore the user defaults.

3.3 Updating the BIOS

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS provides the underlying driver for hardware resources and is the bridge between hardware and operating system. Now hardware and various applications are constantly updated. When your system encounters problems, such as the system does not support the latest published CPU, you need to upgrade your BIOS.

NOTE:

1. Only upgrade the BIOS if you encounter problems and need to.
2. To upgrade the BIOS, please use the BIOS read/write program attached to our driver CD or download the updated version of the program from the relevant website.
3. Do not turn off the power or reboot the system during the upgrade process, so your BIOS data will be damaged and the system may not boot.
4. After the refresh is complete, you need to manually optimize the LOAD Default.
5. To prevent accidents, please backup the current BIOS data first.

CHAPTER 4

Driver Installation

The KMDA-7921/7920/7610 comes with a CD-ROM that contains all drivers and utilities that meet your needs.

4.1 Follow the sequence below to install the drivers:

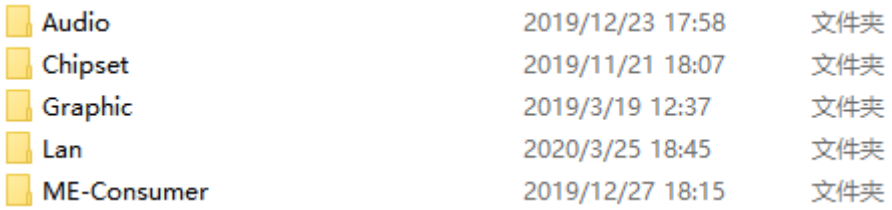


Figure 4.1

Step 1 – Install Audio Driver

Step 2 – Install Chipset Driver

Step 3 – Install Graphic Driver

Step 4 – Install LAN Driver

Step 5 – Install ME Driver

Please read instructions below for further detailed installations.

4.2 Installation:

Insert the KMDA-7921/7920/7610 CD-ROM into the CD-ROM drive. And install the drivers in turn.

Step 1 – Install Audio Driver
1. Double click on the Audio folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install Chipset Driver
1. Double click on the Chipse folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 3 –Install Graphic Driver
1. Double click on the Graphic folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 4 –Install LAN Driver
1. Double click on the LAN folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 5 –Install ME Driver
1. Double click on the ME folder and double click on the Setup.exe
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

4.3 Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license. These software(s) are subject to change at any time without prior notice. Please refer to the support disk for available software.